

**Health Equity Audit:
Go4It! Targeted Weight Management Service
In Nottingham City**

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Janet Simmonds (CityCare Partnership)

Zoe Turner (City Analyst Team – NHS Nottingham City)

Sarah Ross (Information Team – CityCare Partnership)

Dr. Peter Cansfield (NHS Nottingham City)

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1.0 Background

In Nottingham City, results from the National Child Measurement Programme (2009/10) suggest that:

- In Reception Year (aged 4-5 years), 1 in 4 children are overweight or obese
- In Year 6 (aged 10-11 years) more than 1 in 3 children are overweight or obese¹

The Child Measurement Programme (2009/10) shows that Nottingham's children have significantly higher levels of obesity to the England . Obese children are at risk of becoming obese adults reducing life expectancy by an average of 9 years through a greatly increased risk of heart disease, cancer, diabetes and high blood pressure (APHO, 2005). Children who are above a healthy weight are also at increased risk of psychosocial problems, including reduced self-esteem and increased risk of depression and social isolation (Doak et al, 2006).

The prevalence of overweight and obesity has increased in all communities, demonstrating that the whole population is at risk. Some sectors of the population however are more at risk of developing obesity or its complications:

- In Nottingham, prevalence of obesity almost doubles between the age of 4-5 years and 10-11 years².
- A greater percentage of boys than girls aged 2-10 years are overweight (including obese).
- Children in the Bangladeshi, Black African, Black Caribbean and Pakistani (except Year 6 girls) groups are significantly more likely to be classified obese than individuals from the White British ethnic group (Ridler et al, 2009).
- There is a direct relationship between deprivation and obesity in childhood.
- Mosaic groups O, K and N are those most likely to be overweight or obese in Nottingham City (Mosaic Public Sector 2009)³.

¹ NHS Nottingham City (2010) JSNA Child Obesity Chapter

² NCMP Data 2008/09

³ Mosaic Public Sector classifies the population into 15 lifestyle groups to describe their social, economic and cultural behaviour. The three groups identified as being most at risk of obesity in Nottingham are all relatively deprived. Group O is described as 'families in low-rise social housing with high levels of benefit need', K as 'residents with sufficient incomes in right-to-buy social housing' and N 'young people renting flats in high density social housing'.

2.0 The Go4It! Service in Nottingham City

Improving services for the management of obesity are an important part of the NHS Nottingham City Strategy (20010-2014) in accordance with national guidance set out in *Healthy Weight, Healthy Lives*⁴. The Nottingham Healthy Weight Strategy's primary aim is to increase the number and proportion of children and adults who are a healthy weight.

Go4It is an integral part of the child obesity care pathway providing a targeted weight management service to overweight and obese children and their families in the community. As specified in the pathway, the service is provided for children aged 5-13 years with a BMI equal to or above the 98th centile with no significant co-morbidities. Children with a BMI equal to or above the 91st centile are also referred following unsuccessful level 1 intervention, or if deemed appropriate by the referrer as outlined in the pathway guidance document⁵.

The Go4It! service provides an evidence-based, family-based multi-component weight management programme. A key objective of the service is to increase accessibility to families from areas of high health inequality including those living in deprived areas and black and minority ethnic groups. The school nursing service delivers the programme in partnership with Notts County Football in the Community, Citihealth Public Health Nutrition Team and Nottingham City Council Sport & Leisure services. The service:

- Supports children to achieve sustained long term movement towards and maintenance of a healthier weight and movement towards healthier weight.
- Consists of 24 sessions delivered over a 12 week period including 1-1 consultations, measurements and goal setting, physical activity & and healthy eating activities.
- Support families in accessing other services and activities in the community to support a healthy lifestyle.
- Targets children and families in the most deprived areas of the city and BME groups.
- Includes ongoing support from the school nurse for a further 9 months following the end of the programme.
- The programme currently takes place at:
 - o Harvey Hadden Sports Complex, Bilborough
 - o Southglade Leisure Centre, Bestwood,
 - o The Vine Community Centre, Bobbers Mill/Radford

⁴ HM Government. *Healthy Weight, Healthy Lives: A Cross Government Strategy for England*. 2008. London.

⁵ http://www.nottinghamcity.nhs.uk/images/stories/SD_Child%20Obesity%20Pathway%20DocumentFINAL%20VERSION.doc.pdf

- Clifton Leisure Centre, Clifton
- Wild Cats Arena at Jesse Boot Primary School, Bakersfield

Go4It is promoted through training and education about child obesity including the child obesity pathway with relevant health professionals. The pathway along with Go4It promotional material is distributed to GP practices and other health professionals. Advertising also takes place by word of mouth, posters and community events such as Park Life.

2.1 Go4It! Capacity

It is estimated (Nottingham City JSNA, 2009) that there are 4100 overweight & 1800 obese children aged 5 – 13 years resident in Nottingham City. It is assumed that 3800 would potentially benefit from an intervention such as Go4It. (This includes obese children plus a proportion of overweight children who have had unsuccessful Level 1 (of [obesity pathway](#) intervention). Assuming that a minimum of 10% of these is motivated and committed to change if offered the opportunity, capacity for at least 380 specialist programme places per annum need to be provided. During 2009/10, 135 places were provided through the 3 Go4It sites. This has been increased during 2010 to 225 places through a total of 5 sites.

2.2. Summary of outputs from Go4It (2009/10)

During 2009/10, Go4It provided capacity for 59% of estimated need in the City. In spite of this, only 66% of the available places were accessed by families. Therefore less than one quarter (24%) of the estimated need was met.

In the period of 2009-2010⁶:

- 167 families were referred to Go4It
- 89 (53% of referrals) families accessed the service
- 41 (46%) families who accessed Go4It completed the course⁷
- 26 (29%) of children who accessed (part or full attendance) reduced BMI and 20 (22%) reduced body fat at 3 months, while 15 (17%) increased BMI and 18 (20%) increased body fat percentage.
- 19 (46%) of those who fully attended reduced BMI and 18 (44%) decreased body fat at 3 months; 11 (27%) increased BMI and body fat percentage.

⁶ Financial year

⁷ Completion was not defined.

Although the overall need , in terms of numbers of families accessing the service, were not met during 2009/10, this audit will look at those who did access the service and whether they were those from groups with the highest level of need.

3.0 Health Equity Audit

‘Health equity audits identify how fairly services or other resources are distributed in relation to the health needs of different groups and areas, and the priority action to provide services relative to need... The overall aim is to distribute resources relative to health need, otherwise inequities occur which lead to health inequalities. The HEA cycle is not complete until something changes which is likely to reduce inequalities demonstrably. For NHS services, that would probably be resource allocation, commissioning, service provision or care outcomes’.⁸

3.1 Objectives of this HEA

- i. To determine whether Go4It is targeting/reaching areas and groups with highest need;
- ii. To determine whether those with the highest need are experiencing equitable benefit from Go4it in terms of health outcomes⁹.

3.2 Method

- i. We used the national and local Child Measurement Programme data to determine groups at greatest risk of overweight and obesity (i.e. need) in Nottingham;
- ii. To determine whether use of the Go4It service is equitable, we:
 - a. Analysed service data to establish which groups (by age, gender, deprivation, ethnicity, mosaic profile, school and ward) were:
 - i. referred to the service,
 - ii. accessing the service
 - iii. completing the programme
 - iv. experiencing positive health outcomes (reduction in BMI or body fat percentage)
 - b. Compared the data analysed by the various dimensions of equity (from iia above) with need identified through analysis of the NCMP data to establish whether the service is reaching/meeting the needs of groups at greatest risk.

⁸ Health equity audit: A self-assessment tool. Department of Health, 2004.

⁹ Measured by reduction in BMI and body fat at end of 12 week programme

4.0 Overview of need

4.1 Child obesity prevalence in Nottingham City

The Child Measurement Programme (2009/10) shows that Nottingham's children have significantly higher levels of obesity to the England average at age 4 to 5 years (11.3% compared to 9.8%) and at age 10 to 11 years (21.9% compared to 18.7%)¹⁰. However, when Nottingham is compared to similar areas, 2009/10 data shows that it has the lowest levels of obesity in 10-11 year olds, along with Leicester (Table 1).

Table 1: Percentage of Obese Children Aged 10-11 Years- ONS Centres with Industry – B

	2007/8 % Obese	2008/9 % Obese	2009/10 % Obese
England Average	18.3	18.3	18.7
Leicester	20.3	17.8	21.9
Manchester	21.9	22.6	24.0
Nottingham	21.9	22.6	21.9
Birmingham	22.1	24.0	23.1
Wolverhampton	22.3	23.5	24.7
Sandwell	23.8	24.6	23.5
Barking and Dagenham	23.9	24.2	23.6

4.2 Issues of inequality and obesity in children

4.2.1 Age, sex and obesity prevalence

Nationally, prevalence of obesity almost doubles between the age of 4-5 years and 10-11 years (Ridler et al, 2009). This same pattern is seen locally where obesity prevalence was 11% at age 4-5 years and 22% at age 10-11 years (NHS Nottingham City NCMP data 2009/10).

Table 2: National prevalence of child obesity, overweight, healthy weight and underweight, 2007/08

	Reception (4-5 years)		Year 6 (10-11 years)	
	Boys	Girls	Boys	Girls
Obese	10.4%	8.8%	20.0%	16.6%
Overweight	13.6%	12.3%	14.4%	14.2%
Healthy Weight	74.5%	77.9%	64.5%	67.6%
Underweight	1.5%	1.0%	1.2%	1.6%

Source: Ridler et al, 2009

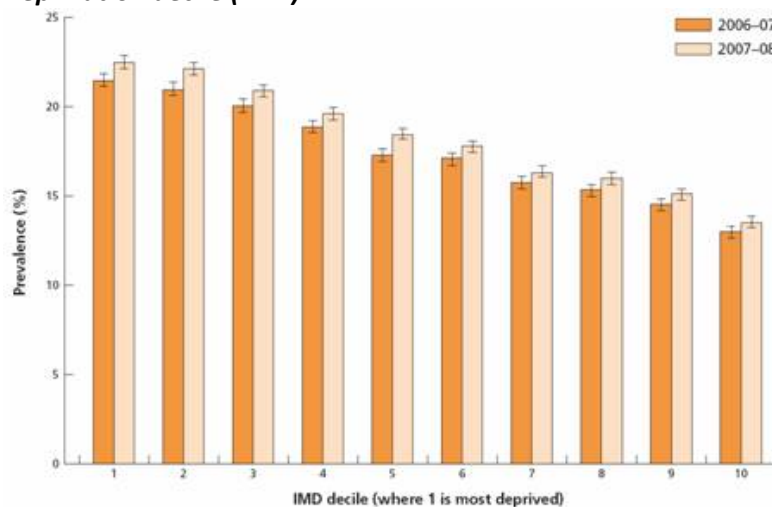
¹⁰ Local NCMP data 2009/10

Table 2 also shows how boys have higher prevalence of overweight and obesity at both age groups (prevalence of obesity amongst boys is 18% higher than the prevalence for girls in Reception Year and 20% higher in Year 6).

4.2.2 Deprivation and obesity prevalence

There is a strong relationship between deprivation and the prevalence of obesity. Figure 1 shows the linear increase in obesity prevalence with increasing deprivation. In Nottingham where 81% of children fall in the first 3 deprivation deciles, this is a significant contributing factor.

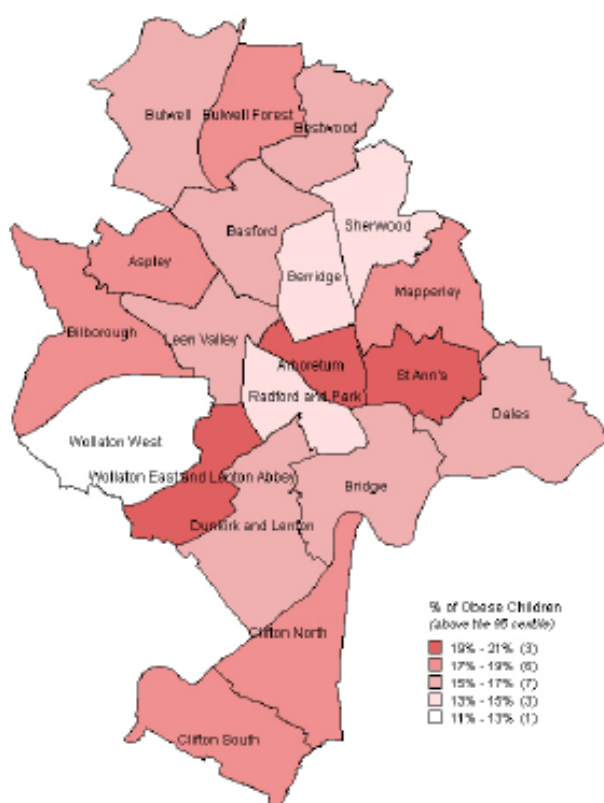
Figure 1: Prevalence of obesity in Year 6 children 2006/07 and 2007/08 by 2007 Index of Multiple Deprivation decile (IMD)



Source: Ridler et al, 2009

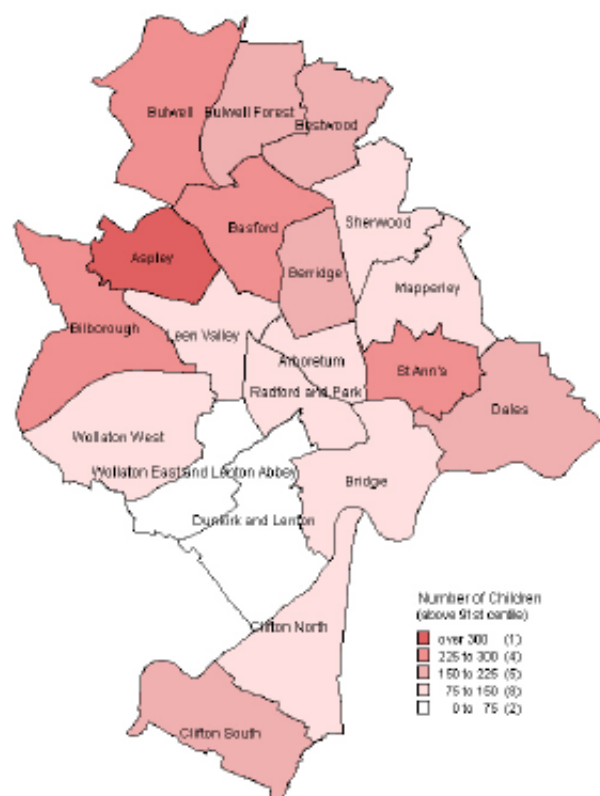
This relationship is also shown locally at ward level with the more deprived wards having the highest levels of child obesity prevalence (Local NCMP data 2006-09). Mapping illustrates the extent to which obese children are concentrated in the more deprived City areas. The wards with the highest *proportion* of obese children are: Aspley, Bilborough, Bulwell Forest, St Anns, Arboretum, Mapperely, Lenton Abbey and Clifton (Fig. 2). It is also useful to examine which wards have the highest *number* of obese children. This shows a similar, yet slightly different picture with the highest numbers in: Aspley, Bilborough, Bulwell, Bulwell Forest, Bestwood, Berridge, Basford, St Anns, Dales and Clifton (Fig. 3).

**Figure 2: Childhood Obesity in Nottingham City:
3 Year Data from 2006-2009**
Percentage of children obese in both Reception and Year 6



produced from both national validated and locally analysed results

**Figure 3: Childhood Obesity in Nottingham City:
3 Year Data from 2006-2009**
Numbers of children overweight and obese in both reception and Year 6



d from both national validated and locally analysed results

Source: Local Child Measurement Programme Data, NHS Nottingham City

4.2.3 Mosaic Group and obesity prevalence

Mosaic is a geo-demographic tool that classifies all UK consumers into 15 distinct lifestyle groups, and within the 15 Groups, 69 Types based on socio-economic and socio-cultural behaviour.

Children from mosaic groups O (families in low rise social housing with high levels of benefit need), K (residents with sufficient incomes in right-to-buy social housing) and N (young people renting flats in high density social housing) have been identified as groups most likely to be obese in the City (Experian, 2009). The wards where these groups predominantly live are: Bestwood, Bulwell, Aspley, Bilborough (group O); Clifton North and Clifton South (group K) and St Ann's (group N). Almost 40% of the City's population are in these groups. Group I (Lower income workers in urban terraces in often diverse areas) also has above average likelihood of being obese and may also be worth consideration.

4.2.4 Ethnicity and obesity prevalence

Children in the Bangladeshi, Black African, Black Caribbean and Pakistani (except Year 6 girls) groups are significantly more likely to be classified obese than individuals from the White British ethnic group (Ridler

et al, 2009). The above average proportion of people from African Caribbean and Pakistani communities within Nottingham is also therefore likely to contribute to Nottingham's overall higher rates of child obesity.

Conclusions from 4.1: Obesity prevalence

- Obesity prevalence in Nottingham increases with age and doubles between ages 4-5 years to 10-11 years.
- Obesity prevalence is higher in boys.
- High levels of deprivation are linked to obesity prevalence.
- Nottingham, which is a relatively deprived city, has obesity prevalence in both 4-5 year olds and 10-11 year olds which is significantly higher than the England average.
- Almost 40% of Nottingham's residents are in Mosaic groups most likely to be classified as overweight and obese in the City; group O (18.63%), K (11.25%), and N (8.63%) (Experian, 2009). Group O live primarily in the outer estates in Aspley, Bilborough, Bestwood wards, and the smaller Lenton Abbey estate. Group K lives primarily in Clifton. Group N live primarily in the St Ann's ward. This corresponds with analysis of obesity prevalence by wards in the City.
- Local NCMP data has not been analysed by ethnicity. However national data shows that obesity prevalence is significantly higher amongst Bangladeshi, Black African, Black Caribbean and Pakistani (except Year 6 girls) groups.

5.0 Equity of Go4It service use

It is important to note that the Go4It service data was not complete. A large amount of data was missing and often the numbers being analysed are very small and this has impacted on the robustness of the analysis. Another point to consider is the fact that a family should only be referred to Go4It when they are motivated to attend. Therefore where data suggests that certain groups are less likely to be referred it is not known if this is a service issue in which health professionals are less likely to refer certain groups or whether these families are more likely to decline a referral to Go4It. However the data will serve as a benchmark for future HEAs of the service and give a good indication of possible inequities.

5.1 Age

The age data was missing for 65 out of 167 referrals (39%) and 30 out of 89 (34%) of those accessing the programme. For the purpose of this HEA, missing age data for those referred and accessing the programme has been allocated based on the assumption that the data is likely to follow the same pattern as the known data. Key points are as follows:

- 5 (3%) children who were referred were above the eligible age of 13 years
- The numbers of referrals and of those accessing Go4It increase with age as would be expected (as obesity prevalence increases) yet numbers decline after age eleven years (Fig.4). Children aged 4 and 5 were the least likely to attend following referral compared to other age groups with 7 year olds being the most likely to attend (Fig. 5) . The mean rate of attendance following referral for all ages was 56%. The only significant difference found was amongst 7 years olds who were significantly more likely to attend following referral than the mean.
- Fig. 6 shows that all children aged 5 to 10 years who accessed the programme fully attended, whereas at age 11 years this dropped to less than one third (30%) and at age 12 and 13 years none of the children fully attended.

Figure 4: Age of children referred and accessing Go4It:2009/10

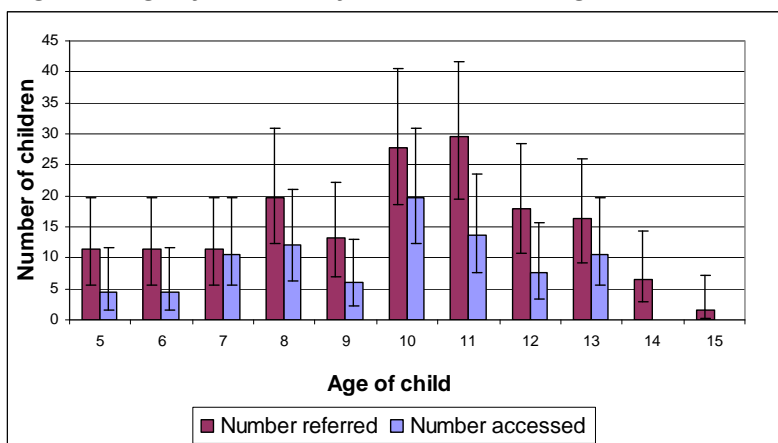
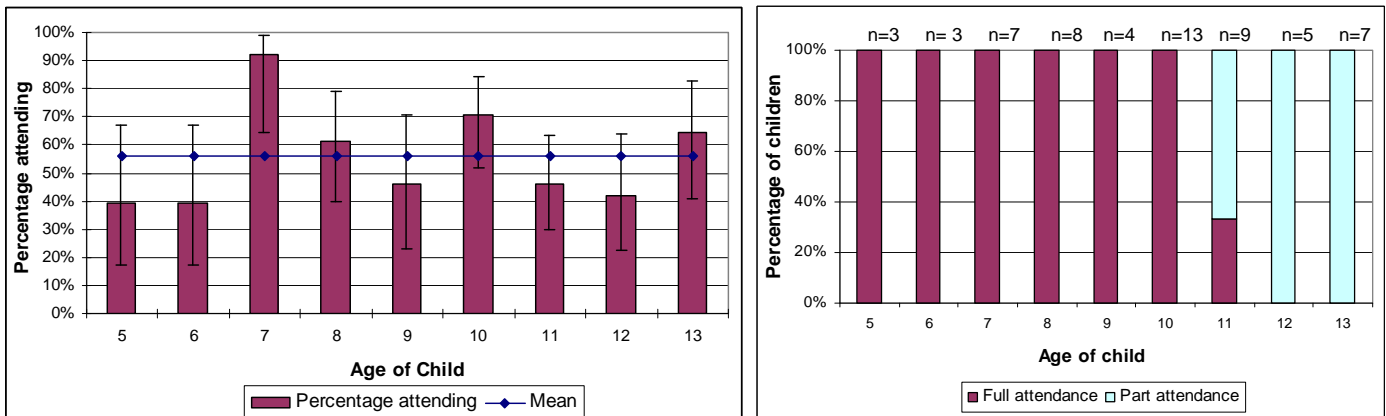


Figure 5: Percentage of referred children who access Go4It by Age: 2009/10 **Figure 6: Full/Part attendance at Go4It by Age: 2009/10**



5.1.1 Outcomes by age

Those aged between 6-8 years were more likely to have reduced BMI and body fat percentage at the end of the 3 month programme than other age groups; however no significant difference can be identified due to small numbers/large confidence intervals. Only 1 out of 21 (5%) children aged 11-13 years reduced their BMI and none in this age group reduced their body fat percentage. Poorer outcomes for those aged 11 years and over may be due to the fact that the majority of children in this age group only part attended the programme.

5.2 Gender

The rates of referral and access to the programme for boys and girls are very similar. Although no significant differences can be found with this sample size, there was a slightly higher rate of access amongst boys than girls and 58% of boys who were referred attended the programme compared to 51% of girls.

Need by gender has been estimated using prevalence by gender from the national NCMP data for 2009/10. National prevalence has been used to calculate the estimated number of girls and boys who are overweight and obese locally. Table 3 suggests that Go4It is meeting need for neither boys nor girls (an equitable service would have a ratio of 1). However it appears that need is being met equitably between girl and boys as both have a need/access ration of 0.17.

Figure 7: Referral and Access to Go4It by Sex: 2009/10

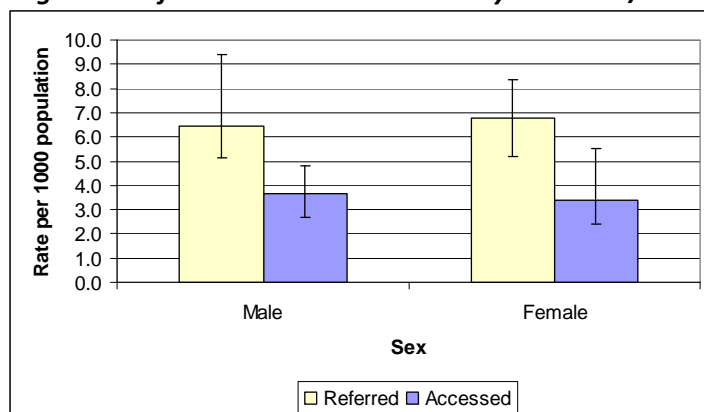


Table 3: Referrals and access to Go4It compared with estimated need by ethnic category: 2009/10

	Population	Estimated number >98th plus .5 >91 st *	Estimated need per 1000 population **	Rate per 1000 referred to Go4It	Need/ referral ratio	Rate per 1000 accessed Go4It	Need/ access ratio
Boys	13000	2899	22.30	6.5	0.29	3.7	0.17
Girls	12200	2416	19.80	6.8	0.34	3.4	0.17

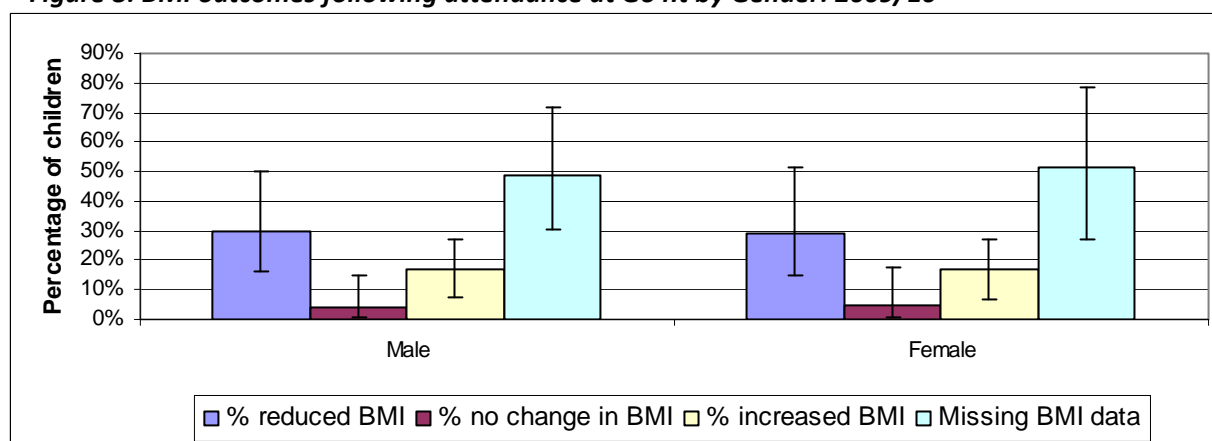
*based on those above the 98th centile plus a proportion of children (0.5) above the 91st centile but below the 98th centile. This is based on the assumption that half of those in the overweight category will have unsuccessful Level One intervention (brief intervention) and thus be eligible for referral to Go4It as per the child obesity pathway.

**based on assumption 10% would be motivated to change

5.2.1 Outcomes by gender

Outcomes for boys and girls who attended the programme were almost identical in terms of changes in body fat percentage and BMI (Fig. 8).

Figure 8: BMI outcomes following attendance at Go4It by Gender: 2009/10

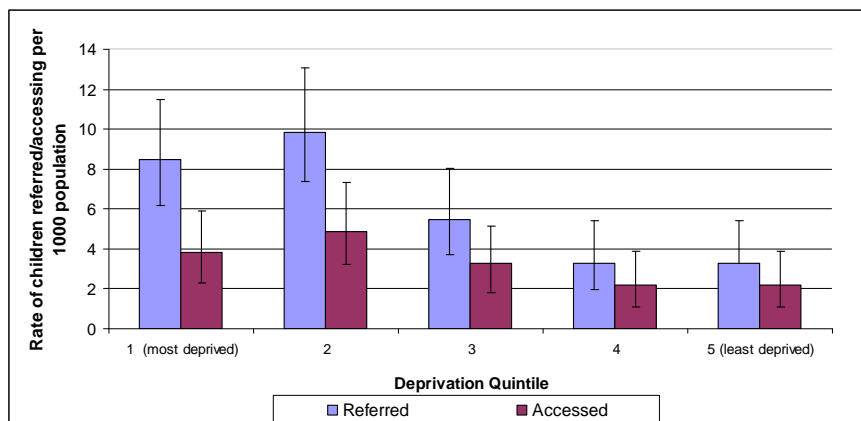


5.3 Deprivation

There was missing IMD data for 46/167 (28%) of children referred and 24/89 (27%) of those who accessed Go4It. For the purpose of this HEA, missing data has been assigned based on the assumption that missing data is likely to be the same as the known data. 14 (8.4%) of referred children and 7 (8%) of those who accessed the programme lived outside the City boundary; this data has not been included in the analysis by deprivation.

Children in the 1st and 2nd most deprived local quintiles were significantly more likely to be referred than children living in the 4th and 5th quintiles. It also appears that a greater proportion of children living in deprived areas of the City are accessing Go4It (Fig. 9).

Figure 9: Referral and access to Go4It by local deprivation quintiles: 2009/10



The slope index of inequality was used to assess whether referrals to Go4It were equitable using national obesity prevalence in 10 -11 years olds by deprivation as the measure of need (Fig. 10). This suggests that although more children were referred to Go4It from the most deprived quintile, in terms of need, it appears that referrals need to at least double to be equitable (illustrated by the steeper slope gradient of 0.67 for need compared to a 0.31 for referrals (Fig.11)

Figure 10: Obesity prevalence (Year 6) by deprivation quintile: 2008/9 (z scores)

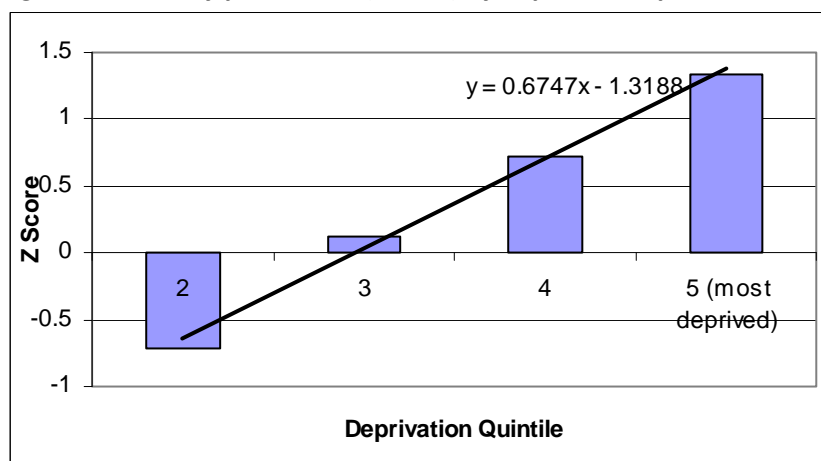
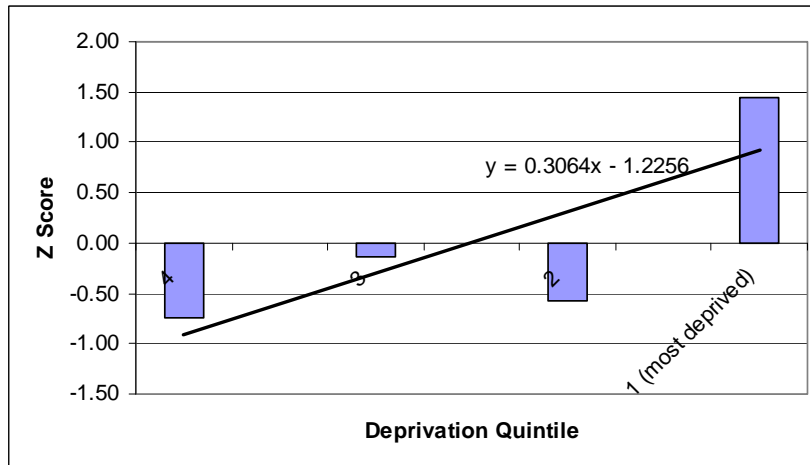
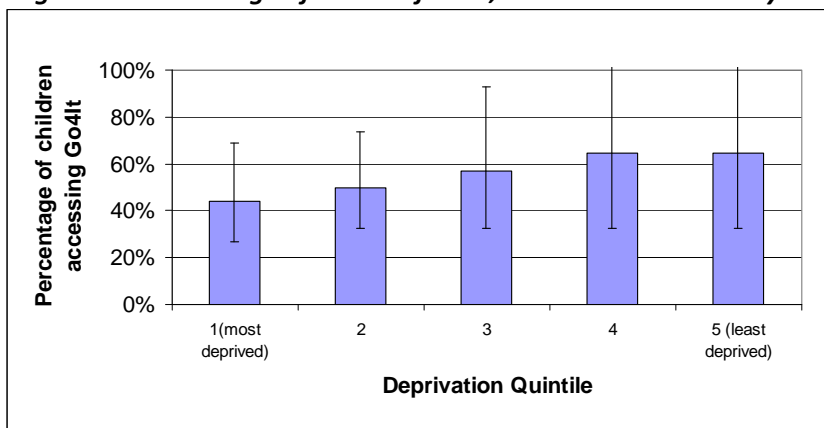


Figure 11: Referrals to Go4It by national deprivation Quintiles: 2009/10 (z scores)



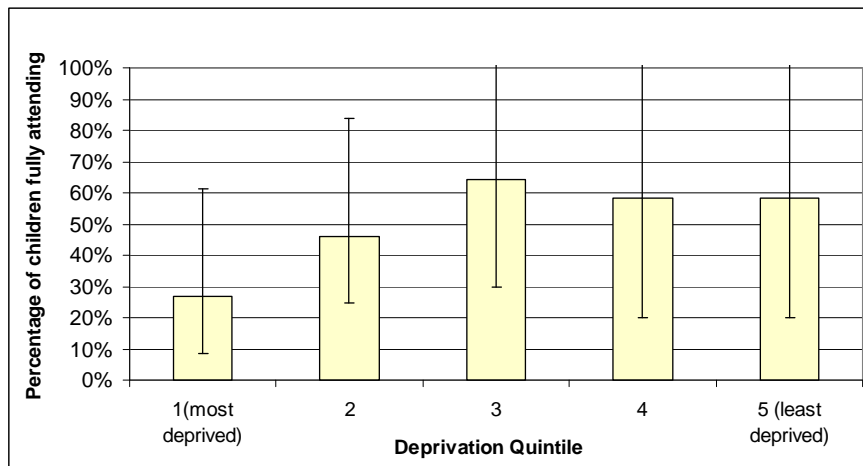
Although no significant difference can be found with this sample size, it appears level of deprivation also affects whether children who are referred go on to access the programme; with those living in the most deprived areas least likely to attend (Fig. 12). This further reinforces the importance of increasing referrals from this group.

Figure 12: Percentage of those referred, who accessed Go4It by local deprivation quintile: 2009/10



Not only were children living in the most deprived areas least likely to attend following referral, data suggests that they are least likely to attend the full programme; just over 1 in 4 (27%) of those from the most deprived areas of the City fully attended (Fig. 13).

Figure 13: Percentage of children accessing Go4It who fully attend by local deprivation quintile: 2009/10



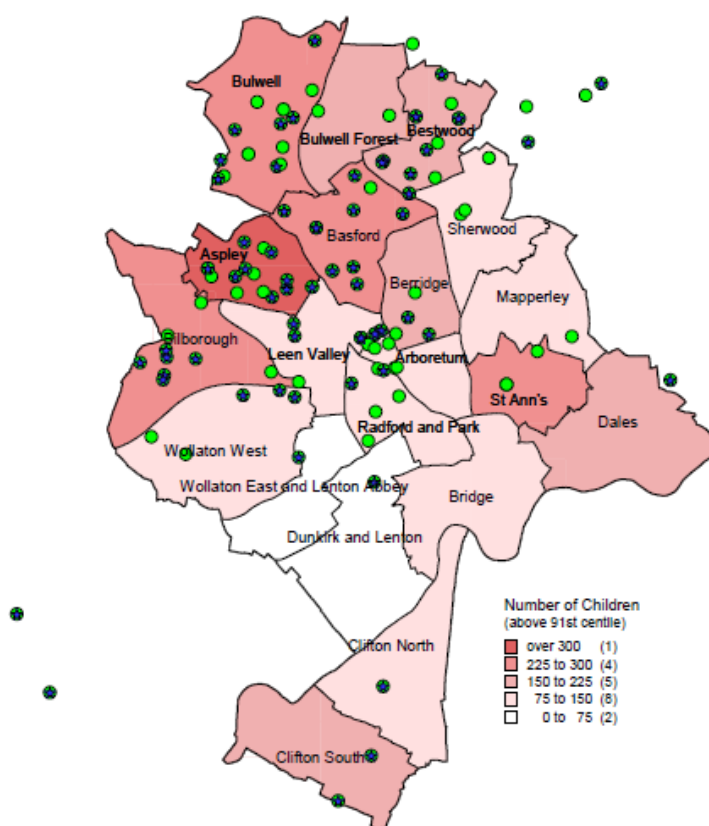
By Ward

Figure 14 shows where families, who were referred and accessed Go4It during 2009/10, lived in the City.¹¹ Overall, this shows that referrals and access to the service correlate strongly with the proximity of a Go4It site (Bilborough, Bobbers Mill/Radford and Bestwood).

- Visually, there are higher levels of referrals and access in the outer estates of Aspley, Bestwood, Bulwell, Basford and Bilborough in the north of the city; these are areas with high numbers of overweight and obese children.
- However, as the map illustrates, there was very low access from wards south of Berridge including several wards with high need including Berridge, St Anns, Dales and Clifton South. This could be explained by the lack of service in, or close to these areas during 2009/10.

¹¹ Determined by Go4It postcode data

Figure 14: Childhood Obesity in Nottingham City 3 year data from NCMP Programme 2006-2009 (number of Children above the 91st centile in both Reception and Year 6) and location of Go4It referrals/attendeess



produced from local analysis of 2006-08 results

Referrals shown by green circle, attendeess shown by blue star.
167 records, 41 with invalid or missing postcodes, not shown

By Mosaic Group

Table 4 presents a Mosaic analysis of the uptake of the Go4It service for 2009/10. Mosaic groups have been ranked by obesity prevalence and allocated an 'obesity index' by Experian who conducted analysis of local NCMP data (2008/09) by mosaic group (column (1)). The average for the population is set at 100, so Group O, with a value of 181, are 81% more likely to be overweight or obese than average, and Group D at 77, are 23% less likely to be overweight. Column (2) gives the proportion of the Nottingham population in the Mosaic Groups. Column 3 shows the proportion of children from the Groups accessing Go4It, column 4 shows the access ratio¹² and column 5 shows the need/access ratio¹³. It is worth noting that numbers used in the analysis are small and there is also a significant amount of data missing (28%) so some caution should be used when interpreting the data. Mosaic analysis of the uptake of Go4It suggests that:

- Those groups with the highest need (groups O, K, N and I) have low need/access ratios, ranging from 0.56 to 0.79. An equitable service would have need/access ratios of 1 for all groups. For those

¹² A calculation of % of Group in Nottingham and % Accessing Go4It

¹³ A calculation of obesity prevalence index and access index.

groups with the highest need; access to the service amongst those in Group O needs to increase by 38%, Group K by 44%, Group N by 47% and Group I by 21%.

Analysis by Mosaic group supports analysis by deprivation in that although those groups with the highest level of need are accessing Go4It proportionately more than other groups, the levels still need to increase quite substantially for the service to be equitable in terms of need.

Table 4: Mosaic¹⁴ analysis of uptake of the Go4It service

Group Code	Group Title	Overweight/Obesity Index (1)	% Nottingham Population (2)	% Accessing Service (3)	Access Index (4)	Need/Access Ratio (5)
A	Residents of isolated rural communities	0	0	0	0	0
B	Residents of small and mid-sized towns with strong local roots	81	2.72	1	37	0.46
C	Wealthy people living in the most sought after neighbourhoods	17	1.01	1	99	5.82
D	Successful professionals living in suburban or semi-rural homes	77	1.76	2	114	1.48
E	Middle income families living in comfortable modern housing	100	5.30	6	113	1.13
F	Couples with young children in comfortable modern housing	156	0.43	1	232	1.49
G	Young, well-educated city dwellers	34	24.36	7	29	0.85
H	Couples and young singles in small modern starter homes	66	3.70	3	81	1.23
I	Lower income workers in urban terraces in often diverse areas	132	11.50	11	104	0.79
J	Owner occupiers in older-style housing in ex-industrial areas	110	5.21	4	77	0.70
K	Residents with sufficient incomes in right-to-buy social housing	126	11.25	8	71	0.56
L	Active elderly people living in pleasant retirement locations	17	0.98	0	0	0
M	Elderly people reliant on state support	37	4.51	0	0	0
N	Young people renting flats in high density social housing	103	8.63	6	65	0.63
O	Families in low-rise social housing with high levels of benefit need	181	18.63	21	113	0.62
	Missing data			28		
	Total		100.0	100.0		

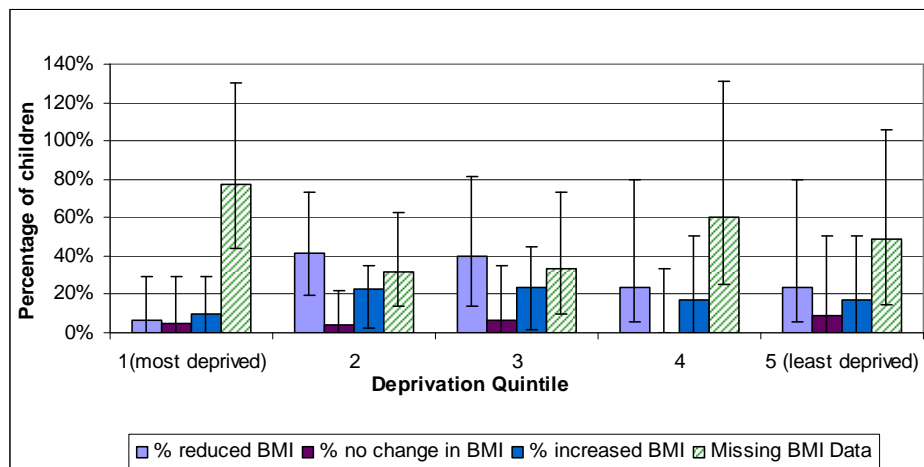
5.3.1 Outcomes by deprivation

BMI data was missing for 44 (49%) of attendees and IMD data missing for 24 (27%) of attendees, making meaningful analysis difficult. However the available data indicates that those in the most deprived

¹⁴ Mosaic™ © Experian Ltd

quintile have the least favourable outcomes. This could be explained by the fact that this group was least likely to fully attend. No significant difference can be found with this sample size.

Figure 15: BMI outcome following attendance at Go4It by local deprivation quintile: 2009/10



5.4 Ethnicity

There was missing ethnicity data for 123/167 (74%) referrals and 46/89 (52%) of those who accessed Go4It. The large amount of missing data made it impossible to assess whether the service is equitable in terms of ethnicity. Therefore Experian's Mosaic Origins was used to assign the most likely ethnic category for those where data was missing. Origins is a software and data application that enables the classification of individuals according to the part of the world from which their forebears are most likely to have originated using the individual's first and last names.

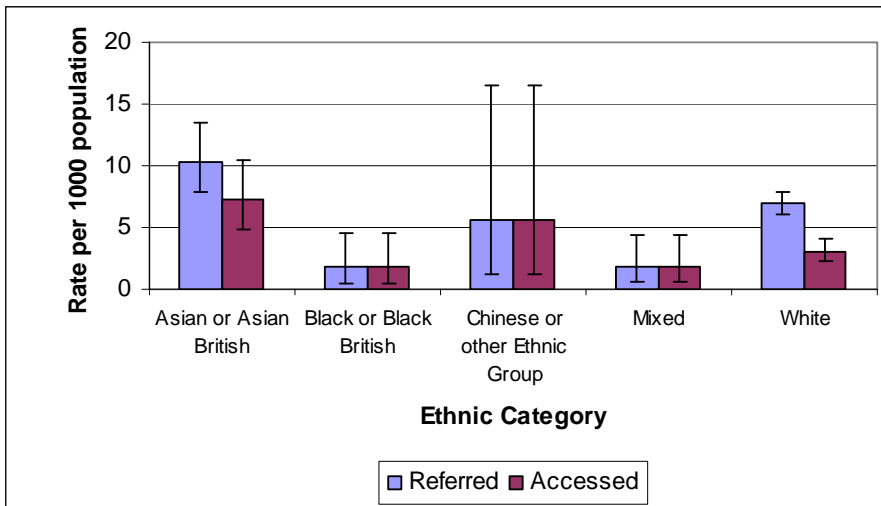
Although Origins has been found to have reasonable agreement with other sources of ethnicity data, e.g. births, 2001 Census summaries and school census data, there are some limitations which need to be considered. It is very good at identifying Indian, Pakistani and Bangladeshi names but it doesn't identify people that belong to Black Caribbean and 'Mixed' categories very well, generally assigning them to 'White British' instead.

All things considered, it was felt that Origins would be a useful tool given that there are no other alternatives, as long as the caveats and limitations are taken into account.

Due to the small numbers in each group, five broad ethnic categories have been used for analysis. Chinese and 'Other' ethnic groups have been joined as one group, again due to small numbers. Data suggests (Fig. 16) that children from the Asian/Asian British category were significantly more likely to be referred and access the programme than children belonging to Black/Black British, Mixed and White

Ethnic Groups. However as Origins is not effective at identifying Black Caribbean and Mixed groups (allocating them White ethnicity instead) it is likely that the rates for these groups are an underestimation; which would likely mean that there is not in fact a significant difference in referral and access between these groups and the Asian category. It can also be assumed that the rate for the White category is likely to be an overestimation.

Figure 16: Rate of Referral and Access to Go4It per 1000 population by Ethnicity: 2009/10



Ratios have been calculated to assess whether referrals and access to Go4It is equitable in terms of need. Need by ethnic group has been estimated using prevalence by ethnicity from the national NCMP data for 2009/10. National prevalence has been used to calculate the estimated number of children who are overweight and obese locally by ethnic group. Table 5 suggests that Go4It is not meeting need for any of the ethnic groups (an equitable service would have a ratio of 1).

The highest need/referral and need/access ratios are for the Asian category (0.48 and 0.34 respectively). This demonstrates that less than half of those in this group estimated to be eligible for referral to Go4It are being referred and about one in three are accessing the programme. The service appears particularly inequitable for children belonging to the Black/Black British category where only 6% of estimated need is being met. Although this is likely to be an underestimation as explained earlier, this inequity needs to be explored further.

Table 5: Referrals and access to Go4It compared with estimated need by ethnic category: 2009/10

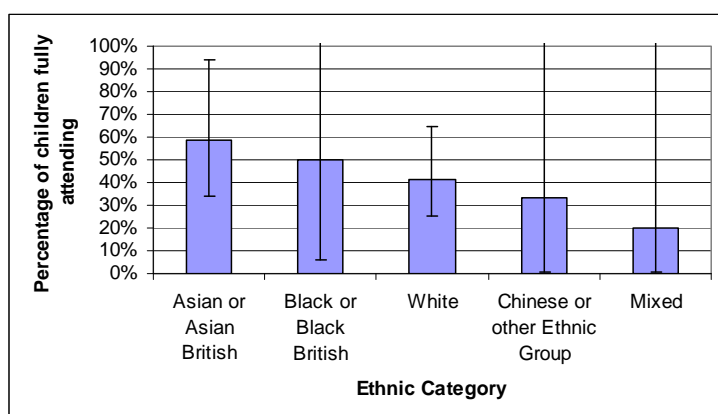
Ethnic Category	Estimated Population size Nottingham ¹⁵	Estimated number >98th plus 0.5 x >91 st *	Estimated need per 1000 population**	Rate per 1000 referred to Go4It	Need/referral ratio	Rate per 1000 accessed Go4It	Need/access ratio
Asian or Asian British	3982	860	21.60	10.3	0.48	7.28	0.34
Chinese and other ethnic group	530	132	24.85	5.66	0.23	5.66	0.23
White	15548	3187	20.50	6.95	0.34	3.09	0.15
Mixed	2696	589	21.85	1.85	0.08	1.85	0.08
Black or Black British	2243	643	28.65	1.78	0.06	1.78	0.06

*based on those above the 98th centile plus a proportion of children (0.5) above the 91st centile but below the 98th centile. This is based on the assumption that half of those in the overweight category will have unsuccessful Level One intervention (brief intervention) and thus be eligible for referral to Go4It as per the child obesity pathway.

**based on assumption 10% would be motivated to change

Although no significant difference can be found with this sample size, it appears that children belonging to Asian Ethnic groups are also more likely to attend the full 12 week programme than children from other ethnic groups.

Figure 17: Percentage of children accessing Go4It who fully attended by Ethnic category: 2009/10



5.4.1 Outcomes by ethnicity

Analysis of outcomes by ethnic group is difficult due to the very small numbers in some groups (Mixed, Black and Other ethnic categories). No significant difference between the ethnic groups can be identified due to these small numbers/large overlapping confidence intervals.

5.5 School

Only 43% of the local authority schools in the City had children which were referred to Go4It. Of the 99 schools in the City, referrals were made for children from 43 of these, 1 child from a private school and 2 children from schools outside the City boundary.

¹⁵ Data from the Annual School Census 2010 (Nottingham City Council Children's Services) along with the ONS 2009 MYE population estimates have been used to estimate population of children aged 5-13 years within each ethnic category. The ONS 2009 estimates by ethnicity only categorise by broad age-groups and the 2001 Census is now very out-of-date, particularly for children so these were not used. The school census data has the drawback of only including those attending City schools (excluding independent schools), but it was felt that this option was still likely to be most accurate.

Almost half of all referrals 82 (49%) and 52 (58%) of those accessing the programme had school data missing. The mean number of referrals per school was 1.7. Only Berridge Junior (located in Arboretum) and Fernwood Junior, (Wollaton West) had significantly more referrals than the mean for all schools (10 and 6 referrals respectively). The mean number of children accessing Go4It per school is 0.9. Only Berridge Junior has significantly more children than the average accessing the programme (6 children).

6.0 Conclusion

Overall, this HEA has been challenging due to the poor data quality and small sample size. However, it has been useful in identifying some possible inequities and the need for further exploration and action. In summary, although Go4It is not meeting overall estimated need in Nottingham, the children and families which are accessing the service appear to be from some of the groups with the highest levels of need (those living in the most deprived areas, Asian ethnicity). However the degree to which the service is meeting the needs of these groups still appears insufficient. Conclusions for each dimension are given below:

Conclusions regarding age and equity of Go4It:

- Data indicates that the service may not be fully meeting the needs of those at the bottom and top of the Go4It age range. This is a particular issue for those aged 11 to 13 years who are likely to have the highest obesity prevalence.
- It appears that older children who do attend have poorer health outcomes than younger groups.
- The mean age for referral is ten years indicating that the NCMP is a likely trigger for referral in Year 6.

Conclusions regarding gender and equity of Go4It:

- It appears that the Go4It service is meeting the needs of boys and girl equally in terms of access and outcomes; however referrals need to increase significantly for sexes for access to match estimated need.

Conclusions regarding deprivation and equity of Go4It:

- The recording of postcode data needs to improve in order to accurately assess the equity of Go4It by deprivation.
- Although proportionately more children from the most deprived areas were referred and accessed the service, in terms of need, referrals of children from the most deprived areas need to at least double for the service to be equitable. Families living in the most deprived areas also appear to be less likely to attend following referral and less likely to complete the 12 week programme than families living in more affluent areas.
- Children from the most deprived areas are less likely to experience positive health outcomes (possibly due to lower likelihood of fully attending the programme). Therefore the service could in fact be increasing inequalities in health as children in the least deprived areas benefit proportionately more through full attendance.
- Close proximity of a Go4It site appears to increase the likelihood of being referred and of accessing the service.
- Analysis by Mosaic group supports analysis by deprivation in that although those groups with the highest level of need are accessing Go4It proportionately more than other groups, the levels still need to increase quite substantially for the service to be equitable in terms of need.

Conclusions regarding ethnicity and equity of Go4It:

- The recording of ethnicity data needs to improve in order to accurately assess the equity of Go4It by ethnicity.
- Children from the Asian/Asian ethnic group are significantly more likely to be referred and access Go4It than Black/Black British, White and Mixed groups. It also appears that they are more likely to attend the full programme than children from other ethnic groups.
- Go4It is not meeting estimated need for any of the ethnic categories indicating referrals need to increase significantly, particularly for children belonging to Black/Black British, Mixed and White groups.
- The service appears particularly inequitable for children belonging to the Black/Black British category where only 6% of estimated need is being met. Although this is likely to be an underestimation due to the use of Origins, this inequity needs to be explored further.

Conclusions regarding school and equity of Go4It:

- The recording of school data needs to improve in order to accurately assess the equity of Go4It by school.
- Data suggests that more than half of the schools in the City did not have any children who were referred or accessed Go4It. Those schools which did have children referred have an average of less than 2 children referred during 2009/10.
- Further analysis is required to assess school nurses' knowledge of the service and reasons for not referring children.

7.0 Recommendations

1. Improve data collection particularly with regards to postcode, ethnicity, school and health outcomes.
2. Wide spread promotion of the service is recommended amongst all potential referrers as well as other children's services workers in the public and voluntary sectors (who can signpost families to referrers).
3. Communicate the need to significantly increase referrals of children living in the most deprived areas of the City to all referrers.
4. Further examination of the appropriateness of the service for the 5-13 year age group, including engagement of young people aged 11 and over who have attended Go4It as well as other young people. This would be beneficial in identifying ways the service could be adapted to better meet their needs or to inform commissioning decisions of an alternative service as required.
5. Explore the possible inequities by ethnic group by using the improved data being collected in 2010/11 and develop ways to address any confirmed inequities.

6. Use of Mosaic to inform the further development and promotion of the service to meet the needs of families from Mosaic Groups K, N and O.
7. Ensure accessibility of the service, particularly in those areas with the highest levels of obesity.
8. Continue to offer support to families who drop out of the service by offering one-one support or signpost to healthy living opportunities within the community as appropriate.
9. Consider recommendations made in the report ***Public and Patient Involvement: Parent's views about what type of weight management service families would find most useful in Nottingham.***
10. Review the service to ensure it is meeting the needs of those living in the most deprived areas.
11. Further analysis to assess school nurses' knowledge of the service and barriers to referring children.